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# FOREST Management BULLETIN

## FOREST MANAGEMENT BY OBJECTIVES

Compiled by

William F. Balmer and Hamlin L. Williston  
Softwood Management Specialists

JULY 1975

AUG - 3 1976

Published by S. E. Area, State and Private Forestry — USDA Forest Service — 1720 Peachtree Rd., N. W. — Atlanta, Georgia 30309

CATALOGING - PREP.

### FIRST, YOU HAVE TO STAY IN BUSINESS

Some people use a tree farm only as an outdoor retreat. Fine and dandy, but this Bulletin isn't for them. This is for those foresters and landowners who want to gain as much revenue as possible from their forests while providing other benefits — the managers who want to have their cake and eat it, too.

Known techniques of planting and spacing, improved nursery stock, utilization, fertilization and prescribed burning serve to produce a maximum of wood products per acre. All these serve other benefits of the forest as well, but the extent will depend upon manipulation of the various techniques according to the owner's objectives.

What's important is that tradeoffs can be made and intensive stand management need not preclude multiple uses. At two recent symposia, experts in their field outlined ways and means of managing young pine stands for most any combination of objectives. Following are highlights of their comments.

### Managing for Wood Production

Today, a forest owner who wants to produce maximum dollar yields of any forest product must practice intensive stand management. With intensive stand management, the owner has three advantages: (1) Flexibility of product decisions; (2) increased raw material quality, not only to sawmills but also to pulpmills; and (3) improved stand health.

Intensive stand management includes matching species to site, preparing the site for regeneration, planting seedlings of good quality, regulating stand density, controlling competing and harmful agents, controlling water, and regarding the harvest as part of the management cycle. All these forms of stand management are fully compatible with multiple use forestry.

### Managing for Wildlife

Diversity of stands is the key to wildlife management. To sustain a wildlife species, the habitat must provide all the needs of all sex and age classes at all times of the year. Leave out one need and it becomes the limiting factor in management of that species. For example, wild turkey habitat must include within each square mile (average home range



*Intensive Management. Regulating stand density is an important means of intensive stand management and is fully compatible with multiple use forestry.*

for wild turkeys) brushy areas for nesting, grassy openings for summer food and brood-rearing, protected roosting sites, and mature hardwoods for fall and winter foods.

The first successional stage in pine plantation management is the devegetated site produced by site preparation until the first growing season. Site preparation is usually completed by early fall, and pines are planted in winter. Although used some by mourning doves and certain other birds, this habitat type has little value to wildlife.

During the seedling stage (first and second growing seasons), the site is dominated by annual forbs and grasses. Wildlife species served here include the bobwhite quail, meadowlark, and mourning dove. These areas also provide favored hunting grounds for various hawks, especially the marsh hawk and the red-shouldered hawk. They may be used as feeding, nesting and brood-rearing habitat for wild turkeys and as feeding areas for deer, especially in summer.

The third stage (sapling or brush) is typically dominated by one or more species of perennial grasses with scattered hardwood sprouts and blackberry thickets. This is good habitat for such species as the yellow-breasted chat, yellow-throat, towhee, cottontail rabbit, and small herbivorous mammals such as the cotton rat. These areas will continue to provide food and cover for deer and nesting areas for wild turkeys.

Subsequent stand classes, unless thinned and burned, become too dense for all but a few species of perching birds.

The successional pattern can be modified by the type, intensity and season of site preparation. For example, windrowed areas generally support more wildlife than areas not windrowed. Early site preparation favors most wildlife foods but ragweed, and certain legumes are favored by site preparation in the fall or early winter.

Spatial arrangement of forest types and age classes is important. For maximum habitat utilization the optimum sized habitat management unit containing all essential types for a species is no larger than the average home range size of the species.

To further promote wildlife, the forest manager can leave certain critical areas — bottomlands, drainages, beaver swamps and sand hill scrub oak communities, for example. He can use wide spacings to delay crown closure and extend the valuable brush stage. He can plant openings and the understory to wildlife foods. Prescribed fire is one of the most useful tools for stimulating wildlife food production and improving browse quality.

In general, anything that can be done to diversify the plant composition in or adjacent to pine plantations will be beneficial to wildlife.

### Managing for Range

Cattle and trees can live together, but the key to success will depend on proper stocking of both trees and livestock, which may require a reduction in

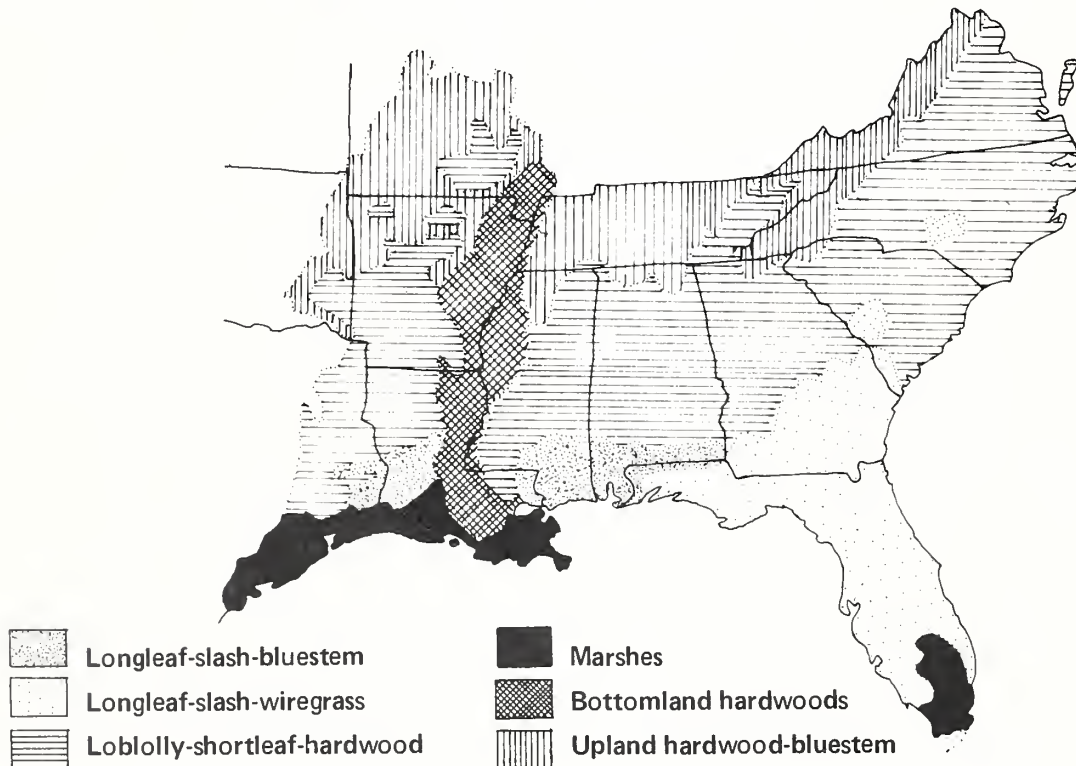


**Good Wildlife Habitat.** *The sapling stage of a pine plantation is good habitat for many wildlife species including cottontail rabbits.*

numbers of either or both. However, the reductions are not as great as sometimes imagined.

Tree density is a major factor affecting forage yields. Annual forage yields in the South can amount to 3000 pounds in open pineland, or practically zero under densely planted pine plantations. For example, in south Georgia, slash pine was planted at a spacing of 6' x 12' in pine-wiregrass vegetation, with no site preparation other than burning. Forage yield was abundant for 11 years, then was cut in half by age 15. Even so, a usable forage resource remains under these trees, whereas with spacings resulting in over 600 trees per acre the forage is generally gone by age 8 to 10 years.

### Major range types in the southern United States.





Less intensive site preparation may be required to maintain a desirable understory for animals; for example, single rather than double chopping or disking. Or instead of treating the entire area, treat relatively narrow strips where trees are to be planted, leaving untreated bands of varying widths between the rows of trees.

Burning for rough reduction to control wildfire is another practice that needs modification in integrated management. Fire is applied to remove old growth, increase nutrient content, improve digestibility and boost availability of forage. For range improvement, fire should be applied every two to three years. This need not reduce wildlife browse, as burning can be done in late winter when plants are dormant.

Nutritive value of southern forage is a problem since plants growing on these infertile soils are generally deficient in amounts needed for good animal growth, especially for breeding herds. Supplemental feed, improved pasture, and minerals to overcome these deficiencies should be provided seasonally as needed. Cattle left on native range during the winter should be supplemented with cottonseed meal or other concentrate feed to maintain productivity and good health.

### Managing the Landscape

Once managers have a young stand, landscape management problems are very few. Operations that introduce the most contrast are the harvest and regeneration.

If landscape management considerations have not been made prior to regeneration, managers still have some opportunity to modify the shape of the stand. This is a one-way street, however: the stand size can only be increased. Form of the stand should be of least contrast as possible with the form in the surrounding landscape.

Once the new stand is established, only two major management activities are used prior to the next harvest — thinnings and prescribed burnings. Neither represent problems in landscape management. Pres-



**Shaping for Visual Acceptance.** *The irregular pattern of trees in the background reduces the negative impact of a clearcut field.*

cribed burns can be done with extremely short visual impact periods. Normal thinnings present very little change to form, line, color and texture within the landscape. Slash disposal should be a minor problem if slash is lopped to within two feet of ground level near roads.

### Managing for Water Resources

Logging, site preparation and prescribed fire can all have an impact on water quality. Logging effects can be minimal if skid trails are properly laid out, equipment does not cross stream channels, filter strips are left along channels, and roads (the greatest source of sediment) are "put to bed" after use.

Management decisions as to mechanical site preparation and prescribed burning will be based upon which environmental quality factor — water quality or air quality — is most important for the particular region. Frequent burns usually result in hardwood understories that are light in density and small in stem size, which can be treated with a drum chopper. The absence of prescribed burning allows the hardwoods to form a denser understory with larger



**Preparation by Burning.** *Frequent prescribed burns help prevent development of dense hardwood understories.*



**Followed by Drum Chopping.** *Light understories can be treated by drum chopping, which causes less erosion than shearing or pushing.*

stems which probably would require shearing or pushing and windrowing with greater site disturbance. This leads to a tradeoff between air quality and water quality, because chopping causes less erosion than shearing or pushing, but chopping requires more frequent burning to keep material small enough for the chopper.

However, measures can be taken to alleviate the impact of intensive site preparation. The prepared area can be seeded to grass or an annual immediately after clearing to gain at least a 70 percent ground cover, and filter strips left between the treated area and streams.

**Note:** This Bulletin is the first in a series of three dealing with the management of young pines. The remaining two will cover early considerations in management and growth and yield information. These Bulletins cover highlights of technical papers presented at two symposiums on Management of Young Pines held on October 22-24, 1974 in Alexandria, Louisiana, and on December 3-5, 1974 in Charleston, South Carolina. Style of the digest precludes crediting each statement to its author; rather, all speakers and their addresses are listed on page 4 according to subject, in case the reader wishes to contact them for further information.

## Information Sources

### Managing for Wood Production

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### Range and Wildlife

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Lewis, Clifford, U.S.F.S., Box 900, Marianna, Fla. 32446  
Wood, G. W., Clemson University, South Carolina  
Beland, J. M., U.S.F.S., Box 106, McClellanville, South Carolina  
Lynn, T. E., International Paper Co., Georgetown, South Carolina

### Landscape Management

Hughes, William, U.S.F.S., 1720 Peachtree, Atlanta, Ga.  
Palazzo, R. P., U.S.F.S., 1720 Peachtree, Atlanta, Ga.

### Water Quality and Control

Dissmeyer, G. E., U.S.F.S., 1720 Peachtree, Atlanta, Ga.  
Ursic, S. J., U.S.F.S., Oxford, Miss. 38655  
West, F. M., Westvaco, Andrews, South Carolina

Approximate Impacts of Management Activities Upon Average Annual Suspended Sediment — ppm

Forest Management Activity	Rotation-Years			
	20	30	40	60
Mechanical Site Preparation <sup>1/</sup>	1109	739	555	370
Fire	55 <sup>2/</sup>	36 <sup>2/</sup>	41 <sup>3/</sup>	27 <sup>3/</sup>
Thinning	Trace	Trace	Trace	Trace
No Recent Activity	Trace	Trace	Trace	Trace
Harvest Cut	1	1	1	1
Skid Trails	18	11	9	20 <sup>5/</sup>
Spur Roads <sup>4/</sup>	2	1	1	5 <sup>5/</sup>
Total	1185	788	607	423

<sup>1/</sup> Site prepared using KG Blade and windrowing debris, exposing 85% mineral soil.

<sup>2/</sup> Two burns during rotation.

<sup>3/</sup> Three burns during rotation.

<sup>4/</sup> Temporary truck trails abandoned after logging.

<sup>5/</sup> Harvesting sawlogs results in more skid trails and spur roads, therefore the approximated impact is higher than in shorter rotations.

Source: George Dissmeyer, State and Private Forestry, U. S. F. S.